FOODS AND BEVERAGES

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COMPLETE SPECIFICATION.

Process for the Preparation of Wort from Malt Alone or Mixed with Unmalted Cereals.

I, Carl Rach, of 1007 Opera House Block, Chicago, Illinois, U.S.A., Engineer and Doctor of Philosophy do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

In making wort from malt I pursue the following process:

A quantity of crushed malt is mashed with water, preferably in the proportion of one part by weight of malt to three parts by weight of water of the temperature of about 145° Fahrenheit. The mixture is then stirred in a mash tun in the usual manner, said tun being provided with a false bottom and the usual pipes. Mashing continues from fifteen to twenty minutes and the mixture is then allowed to stand and separate. This process brings the diastase into solution. The thin diastase solution formed on top is drawn into a tub and stored. The thick part of the mixture which settles to the bottom of the tun is then thoroughly cooked, preferably in a steam cooker, being rapidly raised to about 167° Fahrenheit, and then gradually raised to from 246° to 268° Fahrenheit at which temperature it is kept for about 45 minutes. This thick mash so treated, is returned to the tun and cooled by mixing with cold water to about 178° Fahrenheit. The temperature of the diastase solution is raised to about 154° Fahrenheit, and the two substances are then mixed together, the resulting temperature being about 165° Fahrenheit. Here it is allowed to rest from 30 to 40 minutes when the clear wort can be taken off in the usual way.

When unmalted cereals and malt are to be used in the manufacture of the wort, the process as hereinbefore pointed out, proceeds with regard to a certain quantity of malt until the same has been separated as above stated into two quantities, one being a thin diastase solution, the other a thick mash. In the meantime unmalted cereals are first washed, and then permitted to absorb water to about 40 *per cent.* The unmalted grains may be of various kinds, and in various conditions, as whole or coarsely ground or of the form of grits. There should, however, preferably be two classes of cereals used, one being hulled or freed from husks, and the other being unhulled or with husks. These unmalted cereals are mixed with about one-sixth of their weight of crushed malt, and are brought into a closed steam cooker or the like, containing about twice as much water as cereals by weight, at a temperature of about 122° Fahrenheit. The temperature is increased so that within about an hour it will rise to from 268° to 291° Fahrenheit, thus creating a pressure in the cooker of from 30 to 40 lbs. This high temperature is preserved for about 45 minutes.

This raw cereal mash so prepared is then mixed with the malt mash prepared as hereinbefore shown and, the temperature of the mixture thus formed is brought down to about 178° as before. This mash so formed at the temperature of 178° Fahrenheit is then mixed with the diastase solution, previously raised to 154° Fahrenheit, and the whole is brought to a temperature of about 165° at which temperature it is allowed to remain for from 30 to 40 minutes. The clear wort can then be run off in the usual way.

Sparging can be used when, and as desired (in bringing off the wort). By the use of raw cereals having the husks, and the like, the grain in the mash tun serves better as a filter so as to permit the extractive matter to be easily carried away and the wort to run.

By steaming the thick mash under a pressure and at a high temperature, all of the starch of the brew material is gelatinized, and is easily and perfectly dissolved

[*Price 4d.*]

under the influence of the diastase so as to give a full yield. The diastase at the high temperature of from 167° to 165° Fahrenheit, has its power of transforming starch into malt sugar greatly reduced, and dextrine is formed showing largely in the extract. The product will be a wort containing from 50 to 70 *per cent.* dextrine. Thus we have full yield of wort rich in dextrine, and with a reduced percentage of malt sugar.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is :

1st. The hereinbefore described method or process of producing wort from malt.

2nd. The hereinbefore described method or producing wort from malt and unmalted cereals combined.

3rd. The hereinbefore described method or producing wort from malt and unmalted cereals having husks thereon.

4th. The hereinbefore described method of producing wort which consists in first separating a mash made of malt into a thin diastase solution and a thick mash ; then heating the thick mash to a high temperature ; then cooling it somewhat ; then heating the diastase solution ; then mixing the two ; then drawing off the wort.

5th. The process of producing wort from malt which consists first in mashing a quantity of malt with water ; then separating the thin diastase solution from the thick mash ; then heating the thick mash rapidly to about 167° Fahrenheit and gradually to from 246° to 268° Fahrenheit ; then cooling such thick mash to about 178° Fahrenheit ; then mixing the diastase solution raised to about 154° Fahrenheit therewith ; then drawing off the wort.

6th. The process of producing wort from malt and unmalted cereals which consists first in mashing a quantity of malt with water ; then separating the thin diastase solution from the thick mash ; then heating the thick mash rapidly to about 167° Fahrenheit and gradually to from 246° to 268° Fahrenheit ; then mashing unmalted cereals, some with, some without husks, with water ; then mixing with one-sixth weight of malt, then cooking at from 268° to 291° Fahrenheit under 30 to 40 lbs. pressure ; then mixing the thick malt mash therewith ; then cooling such thick mash to about 178° Fahrenheit ; then mixing the diastase solution raised to about 154° Fahrenheit therewith ; then drawing off the wort.

Dated 23rd day of July 1891.

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